

REMARKS

A total of 15 claims remain in the present application. The present paper is in response to the Office Action mailed May 25, 2007, wherefore reconsideration is respectfully requested.

Referring now to the text of the Office Action,:

- claims 1-15 stand rejected under 35 U.S.C. § 102(e), as being unpatentable over the teaching of United States Patent No. 6,747,986 (Chares et al.).

The Examiners various claim rejections are believed to be traversed by way of the following discussion.

As an initial matter, it appears that the Examiner's citation of Chares et al. suggests a misunderstanding of the language of the claims. Claim 1 is directed to a "method of controlling a multi-layer transport network, the method comprising steps of: determining whether a connection supporting a performance requirement of a call can be established within a first layer of the network ...". The person of ordinary skill in the art will recognise that, within the transport network, the terms "connection" and "call" have very specific meanings, which cannot be confused with the way in which those terms are used in everyday "lay" usage or, indeed within the IP routed access network, for example.

More particularly, ITU-T Recommendation G.8080, which is discussed at some length in the present application, provides the following definitions:

- "Call: See ITU-T Rec. 8081"
- "Connection: A connection is a concatenation of link connections and subnetwork connections (as described in ITU-T Rec. G.805) that allows the transport of user information between the ingress and egress points of a subnetwork."

ITU-T Rec. 8081 defines a “call” as “an association between endpoints that supports an instance of a service.”; while ITU-T Rec. G.805 provides the following definitions:

- “**connection:** A “transport entity” which consists of an associated pair of “unidirectional connections” capable of simultaneously transferring information in opposite directions between their respective inputs and outputs.”;
- “**subnetwork connection:** A “transport entity” that transfers information across a subnetwork, it is formed by the association of “ports” on the boundary of the subnetwork.”;
- “**unidirectional connection:** A “transport entity” which transfers information transparently from input to output.”
- “**transport entity:** An architectural component which transfers information between its inputs and outputs within a layer network. ”

In addition to the foregoing, the person of ordinary skill in the art will be aware of ITU-T Recommendation Q.2983, which describes a Bearer Control Protocol (BCP) “to support the separated control of bearers associated to a call which is controlled independently by means of a separated call control protocol” [Summary] This recommendation defines a “call” as “an association between two or more users using a telecommunication service to communicate through one or more networks”, and further defines a “bearer” as “a connection ...”. ITU-T Recommendations Q.1901 and Q.1902.x further describe that calls and connections (“bearers”, in the terminology of ITU-T Recs. Q.2983, Q.1901 and Q.1902.x) are separately controlled using independent control protocols.

Thus it will be seen that, within the transport network, the terms “call” and “connection” refer to respective different entities which cooperate to enable communication between predetermined endpoints of the network. The “call” is a logical entity that provides “an association between [the] endpoints that supports an instance of a service.” [ITU-T Rec. 8081], while the “connection” is a concatenation of (generally physical) link connections and

subnetwork connections that allows the transport of user information...” [ITU-T Rec. G.8080]
Both of these entities will normally be set up and managed using respective call and bearer control protocols (as per ITU-T Recs. Q.2983, Q.1901 and Q.1902) in order to permit communication between end-points in the network. Connections are associated with calls and are the means by which information is transferred between parties of a call.

Turning now to the specific issues raised in the Office Action, it will be seen that United States Patent No. 6,747,986 (Charas et al.) explicitly teach “ a packet pipe architecture for an access network (e.g. provides access to an IP, ATM or similar packet-based network in order to convey packet data traffic...”. According to Charas et al.:

“the packet pipe (106) provides layer 1 and layer 2 functions to convey packet data traffic across a radio air interface. ... Preferably, the packet pipe 106 has a point-to-multipoint capability, and consequently, can support a plurality of different sessions from a plurality of different user terminals.

The packet pipe 106 also includes a plurality of B.x (e.g., B.1 and B.2) interfaces that operate as independently as possible from the radio technology being used. Furthermore, the packet pipe 106 is designed to provide a plurality of radio bearer services to the higher protocol layers (layers 3 and above), which services are characterized by different QoS parameters that define a set of QoS levels.

The network 100 also includes an Interworking Functions unit at the Network Side (IWF_NS) 114, which is coupled to the RN unit 112 of the packet pipe. The IWF_NS unit 114 functions to map the application flows existing between the B.2 interface and W.2.1 interface (described in detail below). ...

Preferably, the IWF_NS unit maps all ongoing applications, such as, for example, voice, data, etc., from a plurality of terminals. For example, the Medium Access Control (MAC) part of layer 2 (data link layer) can participate in scheduling packets from terminals operating in a shared resource (e.g.,

within the coverage of the packet pipe). The packets can be mapped onto relevant bearers that carry the packets in accordance with predetermined criteria, such as, for example, a QoS requirement for latency, etc. [col 4, lines 1-41]

Based on the foregoing, the person of ordinary skill in the art will recognise that, in the system of Charas et al, the packet pipe 106 provides two “radio bearers”, each of which is accessed through a respective interface B.x, and configured to “carry the packets in accordance with predetermined criteria, such as, for example, a QoS requirement for latency, etc.”

The person of ordinary skill in the art will further recognise that Charas et al fails to teach or suggest any of the elements of the present invention. In particular:

- Charas et al is explicitly directed to radio link in an access network, rather than the transport network of the present invention. In this respect, IP and ATM networks referred to by Charas et al are examples of transport networks, but Charas provides no teaching of such networks per se. Charas et al are exclusively directed to the packet pipe 106 [FIG. 2A] which provides access to, and supports services of the transport network 118. However, Charas et al are otherwise silent with respect to the transport or control of traffic within the networks 118.
- Charas et al do not teach or suggest a multi-layer network of any sort, much less a multi-layer transport network, as required by the present invention. Charas et al do teach the use of different “radio bearers” to carry packets having different “criteria, such as, for example, a QoS requirement for latency, etc.” Furthermore, Charas et al use the terminology of a layered network, for example describing the “radio bearers” as layers 1 and 2 of the packet pipe, and referring to the respective interfaces as B1 and B2, etc.. However, according to Charas et al, each of these “layers” operates over the same physical radio link (Frame-Relay over W-DLC over W-PHY- see FIG. 3), and thus rely on the same connection between IWF-US 104 and IWF-NS 114. The person of ordinary skill in the art will recall, however,

that in a multi-layer transport network, each layer of the network establishes its own connections, using its own physical network infrastructure. As such, the person of ordinary skill in the art will recognise that the packet pipe 106 of Charas et al is, in fact, a single-layer connection which can support different protocol stacks.

- Charas et al do not teach or suggest that calls are set up in any “layer” of the packet pipe 106, and any manner remotely similar to that provided by the present invention. Rather, Charas et al merely state that call signalling for endpoints (including the terminal) can be supported. Once a call has been set up, its packet flows are mapped through an appropriate “layer” of the packet pipe 106. However, there is nothing in this teaching that requires or implies any meaningful association between a call and the “layer” through which its packet flows are mapped.
- Charas et al do not teach or suggest any mechanism by which, if a connection supporting a performance requirement of a first call cannot be established within a first layer of the network, then an association is defined between the first call and a second call instantiated within a respective second layer of the network, as provided by the present invention. Charas et al teach that “packets can be mapped onto relevant bearers that carry the packets in accordance with predetermined criteria, such as, for example, a QoS requirement for latency, etc.” This is the mapping of a connectionless packet flow onto a bearer connection (packet pipe). Obviously, if a first “layer” of the packet pipe 106 cannot support a performance requirement of a packet flow call, then the packet flow for the call will be mapped through the other “layer”. However, there is nothing in this mapping operation that requires or implies that a second call be instantiated in the second layer, nor is there any need nor apparent benefit to defining an association between any such second call and the first call.

- With specific reference to claims 2-8, Charas et al do not teach or suggest anything even remotely similar to the first and second call controllers defined in these claims. The person of ordinary skill in the art will instantly recognise that Charas' teaching of mapping packets to an appropriate "layer" of the packet pipe does not in any way teach, suggest, or imply the use or need for call controllers in each layer.
- With specific reference to claims 9-15, Charas et al do not teach or suggest anything even remotely similar to the call and connection management objects defined in these claims. The person of ordinary skill in the art will instantly recognise that Charas' teaching of mapping packets to an appropriate "layer" of the packet pipe does not in any way teach, suggest, or imply the use or need for management objects in each layer.

In light of the foregoing, it is respectfully submitted that the presently claimed invention is clearly distinguishable over the teaching of the cited references, taken alone or in any combination. Thus it is believed that the present application is in condition for allowance, and early action in that respect is courteously solicited.

If any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an

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extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 16-0820, Order No. 36173.

Respectfully submitted,

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By



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